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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/076,367	02/19/2002	Dennis S. Lee	108339-00132	1505
32294	7590	10/05/2006	EXAMINER: MILLS, DONALD L	
SQUIRE, SANDERS & DEMPSEY L.L.P. 14TH FLOOR 8000 TOWERS CRESCENT TYSONS CORNER, VA 22182			ART UNIT 2616	PAPER NUMBER

DATE MAILED: 10/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/076,367

Applicant(s)

LEE ET AL.

Examiner

Donald L. Mills

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 July 2006.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-46 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-46 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-46 are rejected under 35 U.S.C. 102(e) as being anticipated by Kadambi et al. (US 6,850,521 B1), hereinafter referred to as Kadambi.

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Regarding claims 1 and 24, Kadambi teaches a network switch for switching packets from a source to a destination, which utilizes filtering logic to perform lookups of the rules table, which comprises:

Receiving an incoming data packet (Referring to Figures 8 and 9, Ethernet data arrives.

See column 13, lines 55-57.)

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Parsing the incoming data packet to obtain a portion of the incoming data packet

(Referring to Figure 14, as soon as the first 64 bytes of the packet arrive in input FIFO 142, a filtering request is made. See column 30, lines 54-56;)

Comparing said portion with rules stored in a rule table, where each rule of said rules specifies a set of actions (Referring to Figures 14, 21a, and 22, a 64 byte filter mask is created which is applied in the filtration process which comprises a number of rules in the rules table 22. See column 31, lines 20-25 and 51-56 and column 33, lines 33-35.)

Selecting a match between said portion and a particular rule of said rules; and executing a particular set of actions specified by said particular rule (Referring to Figures 14, 21a, and 22, based upon a match between the filter mask and rules table 22 actions are implemented. See column 33, lines 33-35 and column 34, lines 35-36;)

Each rule field of the rules includes a mask and a selection flag used in the comparing the portion with each rule (Referring to Figures 14, 21a, and 22, the rules table, comprising rows (fields), utilizes a key (mask) which is implemented in searching the table, in addition a filter select (selection flag) is used in the comparison with the rules table (See column 33, lines 35-41 and 55-58.)

Regarding claims 2 and 25, Kadambi *wherein the step of comparing said portion with rules stored in a rule table comprises comparing specific fields of the incoming data packet with corresponding rule fields in all of the rules stored in the rule table* (Referring to Figures 14, 21a, and 22, based upon a match between the filter mask and rules table 22 actions are implemented. See column 33, lines 33-35 and column 34, lines 35-36.)

Regarding claims 3 and 26, Kadambi *wherein specific fields of the packet include a source port identification number and Layer 2 to Layer 7 headers* (Referring to Figure 14, packet filters from layer 2 to layer 7 of the OSI seven layer model. See column 39, lines 58-59.)

Regarding claims 4 and 27, Kadambi *wherein the step of selecting a match between said portion and a particular rule of said rules comprises selecting a highest priority rule of said rules to be the particular rule when more than one rule of said rules match said portion* (Referring to Figure 31, when there is a partial match, actions associated with the filter mask are taken unless there is a full match with a higher filter value, then the actions associated with the rule entry are taken (highest priority). See column 37, lines 57-64.)

Regarding claims 5 and 28, Kadambi *wherein the highest priority rule is determined by the addresses of said rules within said rules tables* (Referring to Figure 31, when there is a partial match, actions associated with the filter mask are taken unless there is a full match with a higher filter value, then the actions associated with the rule entry are taken (highest priority). See column 37, lines 57-64.)

Regarding claims 6 and 29, Kadambi discloses *applying the encoded compact mask of the rule fields to corresponding fields of the incoming data packet to obtain a packet field value; comparing the packet field value with a rule field value contained in the one of the rules; and examining the selection flag of the one of the rule fields to determine whether the one of the rules is a potential match* (Referring to Figures 14, 21a, 22, and 31, based upon a match between the filter mask and rules table 22 actions are implemented. See column 33, lines 33-35 and column 34, lines 35-36. The rules table comprises a key, which is implemented in searching the table; in

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addition a no match action (NMA) bit (selection flag) is used in the comparison with the rules table. See column 33, lines 35-41 and 55-58 and column 36, lines 59-64.)

Regarding claims 7 and 30, Kadambi discloses *rule fields with a fixed location and a compact mask, rule fields with a fixed location and a full mask that is as wide as the packet field value, and rule fields with a programmable field location which allows the rule field value to be mapped to any contiguous section of the portion of the incoming data packet* (See Figures 22, 23, and 31.)

Regarding claims 8 and 31, Kadambi discloses *expanding the compact mask to a full mask as wide as the packet field value and applying the full mask to the portion* (Referring to Figures 22, 23, and 31, the filter value, egress port, egress module id, ingress port, and filter number (each individually, a compact mask) comprise the search key. See column 33, lines 25-33 and column 36, lines 59-64.)

Regarding claims 9 and 32, Kadambi discloses *the full mask is applied to the portion to obtain at least one of an IP destination address and an IP source address as the packet field value* (Referring to Figures 20 and 31, destination IP address and source IP address. See column 39, lines 33-45.)

Regarding claims 10 and 33, Kadambi discloses *examining a global programmable flag to determine whether a start address of the programmable field location is a beginning of a layer 2 header or a layer 3 header of the incoming packet* (Referring to Figures 20 and 31, multi-field classifiers filter layer 2 and layer 3 headers specified by an offset based upon the NMA bit. See column 31, lines 29-34 and column 39, lines 49-56.)

Regarding claims 11 and 34, Kadambi discloses *inverting the result of the comparing the packet field value step when the selection flag is set to a particular value* (Referring to Figure 22, when the NMA bit is set to one, the filter is an exclusive filter. See column 33, lines 40-43.)

Regarding claims 12 and 35, Kadambi discloses *determining a validity of the packet field value and using the determination to decide whether the one of the rules is the potential match* (Referring to Figure 31, when there is a partial match, actions associated with the filter mask are taken unless there is a full match with a higher filter value, then the actions associated with the rule entry are taken. See column 37, lines 57-64.)

Regarding claims 13 and 36, Kadambi discloses *parsing the portion of the data packet to determine the validity and returning the validity result and the packet field value* (Referring to Figure 31, when there is a partial match (validity), actions associated with the filter mask (packet field value) are taken unless there is a full match with a higher filter value, then the actions associated with the rule entry are taken. See column 37, lines 57-64.)

Regarding claims 14 and 37, Kadambi discloses *comparing one or more programmable rule fields with certain packet field values in the incoming data packet, and, when the one or more programmable rule fields do not match, overriding comparison results of all other rule fields in the same rule* (Referring to Figure 31, when there is a partial match based upon offset values (programmable fields), actions associated with the filter mask are taken unless there is a full match with a higher filter value, then the actions associated with the rule entry are taken. See column 31, lines 29-34 and column 37, lines 57-64.)

Regarding claims 15 and 38, Kadambi discloses *determining how many bytes of the packet field value of the incoming data packet are present and indicating the rule field is not the*

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match when mask bits of invalid bytes of the rule field value are not set to zeroes (Referring to Figure 31, when there is a partial match based upon offset values, actions associated with the filter mask are taken unless there is a full match with a higher filter value, then the actions associated with the rule entry are taken; based upon at least one of the action bits set to 1. See column 31, lines 29-34 and column 37, lines 32-35 and 57-64.)

Regarding claims 16 and 39, Kadambi discloses *determining whether a particular section of the portion required for a selected rule field value is present in the parsed portion* (Referring to Figure 31, when there is a partial match based upon offset values, actions associated with the filter mask are taken unless there is a full match with a higher filter value, then the actions associated with the rule entry are taken. See column 31, lines 29-34 and column 37, lines 57-64.)

Regarding claims 17 and 40, Kadambi discloses *determining that one of the rules is the potential match when the packet field value is invalid but the compact mask of the rule field is all zeroes* (Referring to Figure 31, when there is a partial match based upon offset values, actions associated with the filter mask are taken unless there is a full match with a higher filter value, then the actions associated with the rule entry are taken, based upon the action bits set to 0. See column 31, lines 29-34; column 37, lines 28-32 and 57-64; and column 36, lines 59-64.)

Regarding claims 18 and 41, Kadambi discloses *determining that one of the rules is the potential match when the packet field value is invalid but a valid bit of the rule field is set to zero* (Referring to Figure 31, when there is a partial match based upon offset values, actions associated with the filter mask are taken unless there is a full match with a higher filter value,

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then the actions associated with the rule entry are taken, based upon the action bits set to 0. See column 31, lines 29-34 and column 37, lines 28-32 and 57-64.)

Regarding claims 19 and 42, Kadambi *wherein the step of executing a particular set of actions specified by said particular rule comprises modifying a header of the incoming data packet, forwarding the incoming data packet to a destination address, or updating a management information register* (Referring to Figure 22, the 802.1p Priority in the packet header is changed. See column 34, lines 35-37 and column 35, lines 60-64.)

Regarding claims 20 and 43, Kadambi *wherein the step of updating a management information register comprises providing a bitmap used to increment individual counters indicating a forwarding, dropping, or processing of certain types of packets* (Referring to Figures 22, the filtering logic can discard the packet, send the packet to the CPU 52, modify the packet header or IP header, based upon the filter mask which is essentially a bit map, then update the counters. See column 34, lines 35-37; column 35, lines 60-64; and column 38, lines 1-5.)

Regarding claims 21 and 44, Kadambi *wherein said particular set of actions comprises setting a flow identification for the incoming data packet such that the packet is classified according to a class of service* (Referring to Figure 22, the packet is sent on priority COS Queue. See column 34, lines 39-40.)

Regarding claims 22 and 45, Kadambi *wherein the step of comparing said portion with rules stored in a rule table comprises comparing said portion with rules stored in a rule table implemented in a static random access memory, with three types of rule fields and action fields all stored in each row of the static random access memory* (Referring to Figure 23, rules are applied (in memory) in a rules table.)

Regarding claims 23 and 46, Kadambi *wherein the step of comparing said portion with rules stored in a rule table comprises comparing said portion with rules stored in a rule table implemented in a content addressed memory, where each entry of the content addressed memory includes a selection flag and a validity bit* (Referring to Figure 23, rules are applied (in memory) in a rules table.)

Response to Arguments

3. Applicant's arguments with respect to claims 1-46 have been considered but are moot in view of the new ground(s) of rejection.

Rejection Under 35 USC 112

Applicant's arguments see page 2 of the remarks, filed 13 July 2006, with respect to claims 1-46 have been fully considered and are persuasive. The 35 USC 112 second paragraph rejection of claims 1-46 has been withdrawn.

Rejection Under 35 USC 102

Due to a typographical error, the previous Office Action presented a 35 USC 102(b) rejection as anticipated by Kadambi instead of the intended 35 USC 102(e) rejection. The present Office Action has been corrected accordingly.

On page 6 of the remarks, regarding claims 1 and 24, the Applicant argues Kadambi does not disclose *wherein each rule field of said rules includes a mask and a selection flag used in the comparing said portion with each rule*. The Examiner respectfully disagrees. The claims are given a broad, reasonable, and literal interpretation. Limitations from the specification are not read into the claims, instead, the claims are read in light of the specification. Kadambi discloses

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a rules table, comprising rows (fields), utilizes a key (mask) which is implemented in searching the table, in addition a filter select (selection flag) is used in the comparison with the rules table (See column 33, lines 35-41 and 55-58.) The generated key (mask) is a result of the application of the mask-portion of the filter to a field, and therefore, logically equivalent to a mask. The filter select (selection flag) is 3 bits long and used to identify the Filter Number, which is used to match the entries. If the Applicant wishes the claims to reflect a specific meaning, the claims should be amended to reflect such an intention.

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donald L. Mills whose telephone number is 571-272-3094. The examiner can normally be reached on 8:00 AM to 4:30 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be reached on 571-272-3174. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Donald L Mills

September 30, 2006

Seema S. Rao
SEEMA S. RAO 10/2/06
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600